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Abstract

PURPOSE: To grow the titled superconductor crystal, having good crystallinity and capable of selective growth on a substrate, by alternately feeding a gas species containing Ga chloride and a gas species containing group V constituent element onto a silicon substrate having a formed mask pattern.

CONSTITUTION: A Ga source boat 12 is placed on the upstream side of a growth chamber 11 in the lower stage and a carrier gas and HCl gas are fed from the upstream side thereof to adsorb the formed Ga chloride on a silicon substrate 14 having a formed mask pattern. The substrate 14 is then moved to a growth chamber 13 in the upper stage and a gas species containing a group V constituent element is fed and adsorbed on the substrate 14. The above-mentioned operations are alternately repeated to carry out atomic layer epitaxial growth of a III-V compound semiconductor crystal on the substrate 14.